Computer Desktop Encyclopedia
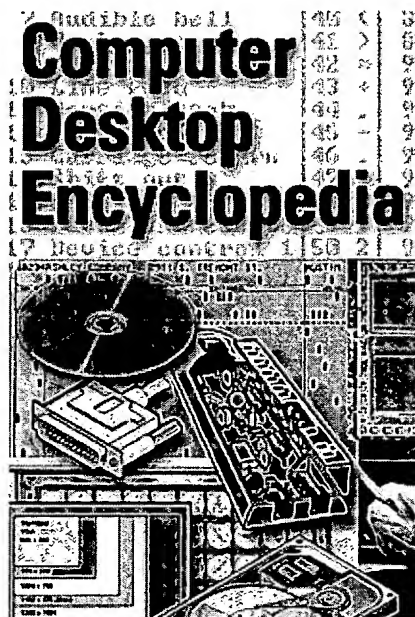
*The following text
is fully
HYPERLINKED!*

*To jump to a term
used ANYWHERE
within a definition,
click on that word
or
highlight
adjacent words.*

*To go to a Web
site, click
the URL.*

how to select a PC display system

The display adapter and monitor you use can make a big difference in your computing enjoyment. The factors to consider are:

1. LCD or CRT
1. Monitor size and resolution
2. Number of colors
3. Refresh rate
4. Graphics and video acceleration

LCD OR CRT

LCD flat panel displays for desktop use have several advantages over CRTs. They take up less room on the desk, emit less radiation, use less current, and they are not affected by glare. Best yet, they provide a very crisp and pleasing display. Their only disadvantage is their higher cost.
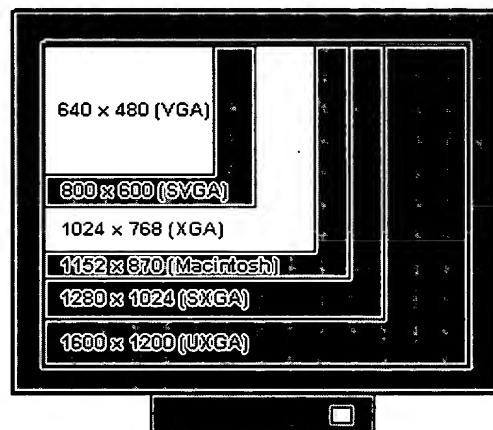
Don't be fooled in the ads. A "flat screen" is not a "flat panel LCD screen." The screens on CRTs have become flatter over the years, providing more uniform sharpness at the edges of the screen. A flat screen monitor often means a CRT, not a thin panel LCD screen.

MONITOR SIZE AND RESOLUTION

Monitor size and resolution depend on the applications you run. The standard resolutions are 640x480, 800x600, 1024x768, 1280x1024 and 1600x1200. For example, 640x480 means that there are 640 columns and 480 rows of pixels on screen. The higher the resolution, the more viewable material on screen at one time.

For standard Windows applications, 1024x768 is the desired resolution with at least a 17" monitor. A 19" or 20" monitor is better yet. For desktop publishing and graphics work, 1280x1024 on a 20" monitor is preferred.

The aspect ratio of most computer monitors is 4:3.

640 x 480 (VGA)
800 x 600 (SVGA)
1024 x 768 (XGA)
1152 x 870 (Macintosh)
1280 x 1024 (SXGA)
1600 x 1200 (UXGA)

Screen Resolutions

These are the common screen resolutions. There are higher resolutions for special applications, such as document imaging. The higher the resolution, the more information (pixels) can be displayed on screen at one time.

NUMBER OF COLORS

The standard number of colors that are displayed are 16, 256, 65K and 16M. The jumps are large, from 256 to 65 thousand to 16 million. The number of colors is known as the color depth, or bit depth. Sometimes a display adapter will offer an "in-between" 15-bit color depth.

Number of Colors	Color Depth	Commonly Known as
16	4-bit	Standard VGA
256	8-bit	Super VGA
32K	15-bit	High Color
65K	16-bit	High Color
16M	24-bit	True Color

To display multimedia applications, you need at least 65K colors, or 32K colors if your adapter supports it. The most realistic photographs and full-motion video will be achieved with 16M colors, but 65K is generally adequate. For standard business applications, such as word processing and spreadsheets, 256 colors will even suffice.

REQUIRED DISPLAY ADAPTER MEMORY (MB)

RESOLUTION	NUMBER OF COLORS			
	16 (4bit)	256 (8bit)	65K (16bit)	16M (24bit)
640 x 480	.5	.5	1	2
800 x 600	.5	1	2	2
1024 x 768	1	1	2	4
1152 x 870	1	2	2	4
1280 x 1024	1	2	4	4
1600 x 1200	2	2	4	8

Memory Requirements
More memory on the display adapter (video card) is required for higher resolutions and more colors.

REFRESH RATE

The refresh rate is the number of times per second the image is painted onto the screen. Refresh is necessary, because the phosphors hold their glow for just a fraction of a second. The higher the refresh rate, the more rock solid the image will appear on screen. The higher the better. Look for a refresh of at least 70Hz at your desired resolution.

GRAPHICS AND VIDEO ACCELERATION

Placing drawing functions into the circuits of the display adapter speeds up displaying images on screen. After Windows became popular, vendors added graphics acceleration to their cards, which put various screen drawing functions into the hardware. Today, any display adapter worth its salt has built-in graphics accleration.

The latest trend in hardware-supported features is video acceleration, which puts several full-motion video functions into the chips. Look for these features if you plan on running a lot of multimedia movies. See *video accelerator*.

It's a Tradeoff

The more colors, resolution and refresh, the harder the display adapter has to work and the more expensive. In addition, at higher settings, the slower the adapter operates, and the slower your screen redraws. Whenever there's a faster adapter that runs 16 million colors at yet a higher resolution, it's always a breakthrough.

Following is an example of adapter specifications. The numbers are from Number Nine Visual Technology's earlier 9FX Motion 771 card, which included video acceleration. Number Nine has made many models both above and below the Motion 771.

Notice how the the colors decrease as the resolution increases. Also notice that it takes more memory (VRAM) on the display adapter to achieve higher resolutions and higher colors at the same time.

		RESOLUTION					
		640 x	800 x	1024 x	1152 x	1280 x	1600 x
VRAM		480	600	768	864	1024	1200	x
2MB	**Colors**	**16M**	**16M**	**65K**	**65K**	**256**	**256**	
	Refresh	150	150	150	150	100	83
4MB	**Colors**	**16M**	**16M**	**16M**	**16M**	**65K**	**65K**	
	Refresh	150	150	150	150	100	83

Web browser

The program that serves as your front end to the World Wide Web on the Internet. In order to view a site, you type its address (URL) into the browser's Location field; for example, **www.computerlanguage.com**, and the home page of that site is downloaded to you. The home page is an index to other pages on that site that you can jump to by clicking a "click here" message or an icon. Links on that site may take you to other related sites.

Browsers have a bookmark feature that lets you store references to your favorite sites. Instead of typing in the URL again to visit the site the next time, you select one of the bookmarks.

Although Mosaic was the browser that put the Web on the map, the two major browsers today are Netscape Navigator and Microsoft Internet Explorer. Navigator and Internet Explorer each vie for top recognition by introducing new features and functions that fragment Web sites into competing camps. When a site says "best viewed by Netscape Navigator" or "best viewed by Internet Explorer," it means that the pages were programmed for that particular browser. Using the other browser will ignore some of the page's fancy features until a subsequent release supports them. See *World Wide Web, HTML* and *microbrowser*.

Valley by the Sea by Barbara Postel
oil/linen 30x42"

BEST AVAILABLE COPY

Valley by the Sea by Barbara Postel
oil/linen 30x42"

The Most Well Known

Internet Explorer and Netscape are the two major browsers used to access the World Wide Web. Similar in features and function, each new version includes enhancements that the other generally catches up to in its next release. (Web page examples courtesy of Pyramid Studios, www.artistexpo.com)

There Are Others

Opera is a highly respected Web browser from Norway that offers many unique features, including the ability to magnify the image as shown here (see Opera). (Web page example courtesy of Pyramid Studios, www.artistexpo.com)
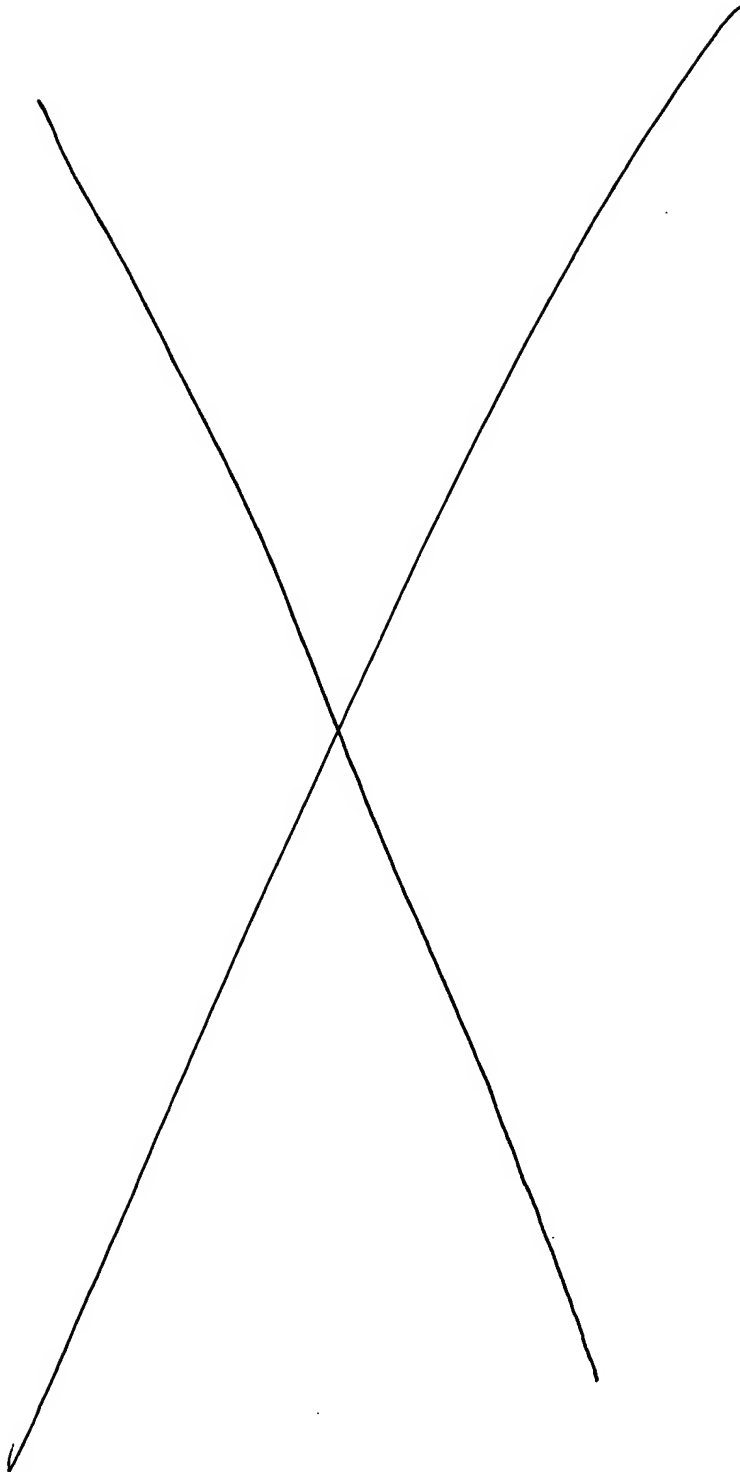
Windows

The most widely used operating system for personal computers. Windows provides a graphical user interface and desktop environment similar to the Macintosh, in which applications are displayed in re-sizable, movable windows on screen.

Windows contains built-in networking, which allows users to share files and applications with each other if their PCs are connected to a network. In large enterprises, Windows clients are often connected to a network of UNIX and NetWare servers. The server versions of Windows NT and 2000 are gaining market share, providing a Windows-only solution for both the client and server. See *Windows versions*.

Windows How to's
In this Encyclopedia

All the Windows "how to's" in this Encyclopedia have a "Win" prefix in front of their name in order to group them together in the index; for example, *Win Change window appearance* and *Win Finding files*. For fundamentals on how to work with Windows, see *Win abc's*.

Advantages of Windows

The single advantage to Windows is the huge wealth of application programs that have been written for it. It is the de facto standard for desktop and laptop computers worldwide with hundreds of millions of users□. In many cases, people no longer ask what platform software runs on. If you use a computer, they expect it to be Windows.

Windows is supported by Microsoft, the largest software company in the world, as well as the Windows industry at large, which includes tens of thousands of software developers. This *network effect* is the reason Windows became successful in the first place.

Disadvantages of Windows

Windows 95, 98, ME, NT, 2000 and XP are complicated operating environments. Certain combinations of hardware and software running together can cause problems, and troubleshooting can be daunting. Each new version of Windows has interface changes that constantly confuse users and keep support people busy.

Installing Windows applications is problematic. When Windows was first introduced, memory was limited and expensive, and operating system components (DLL files) were designed to be shared by all applications. Microsoft allowed software publishers to install its latest DLLs along with their applications to ensure the DLL version the application needed would be present on the user's machine. The problem is that some installation programs do not check dates and overwrite a newer DLL with an older one. This causes another application that worked for months to fail just because you installed a new application that has no apparent relationship to it (except for sharing functions in the same DLL).

Microsoft has worked hard to make Windows 2000 and Windows XP more resilient to installation problems and crashes in general. It takes years to bullet proof an operating system especially when major new versions are constantly developed and rushed to market.

Are There Other Choices?

The primary other choice is the Macintosh. The Mac has always been more consistent and easier to use than Windows. The primary disadvantage of the Mac is that there are fewer Mac applications on the market than for Windows. However, all the fundamental applications are available, and the Macintosh is a perfectly useful machine for almost everybody. Data compatibility between Windows and Mac is an issue, although it is often overblown and readily solved.

In the latter part of the 1990s, Oracle, Sun, IBM and others launched the network computer (NC), which is a diskless workstation that obtains all data and programs from the network server. Aimed primarily at large corporations, NCs have been struggling to gain acceptance in a Windows-centric world (see *network*☐ computer☐). However, the confusion and complication of the Windows platform, combined with the explosion of the Internet have caused many to believe that the Web browser will become the future user interface to all data and programs whether hosted on intranets internally or at a servce provider on the Web. Since the Web browser runs on all platforms (Windows, Mac, UNIX, etc.), it provides a universal client interface that can run Java applications.

It was expected that Java programs downloaded from a server could replace all the common Windows applications (word processors, spreadsheets, e-mail, etc.). To date, this has not happened, because Java runs slower than native applications, and the Java interpreter (Java Virtual Machine) from Microsoft is specialized for Windows, making interoperability a problem. As a result, although the Web has changed everything else, it has thus far not displaced Windows as the client standard by any stretch.